1:Stanford U. S-4, 5 1956 AF16 SW China
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farmers there will be little left for celebration when the creditors have been dealt with.

In the rice lands of the Southwest the most intensive work of the agricultural year begins immediately after the New Year. At that time the farmer harvests his winter crops -- usually rape and wheat sometimes supplemented with winter beans and peas. Right after the New Year, often before the winter harvest, the farmer sets out his rice plants in nursery beds near the farmhouse. Then he removes his winter crop stubble and plows and prepares the fields for the young rice plants. He spreads fertilizer over the land and then breaches the dike and allows the irrigation water to flow in. After the desired water level is reached the field is harrowed again and again; then begins the back-breaking work of transplanting the rice shoots from the nursery beds to the flooded fields. The farmer has an easier life during the ripening of the grain. As the grain ripens, the fields dry, and at last it is harvest time. The harvesting and threshing are done with primitive implements, and many hands are required; straw is carefully

• 243 saved in bundles for thatch and for fuel.[3]

[427] 241 Once the harvest is in, the farmer, if he is a tenant, has to pay a share -- often 40 per cent of the crop -- to the landlord.[4] He must also deal with the tax collector who relieves him of yet another substantial share of his crop. If the year has gone well, the rice borers have not destroyed too much of his crop, and the tax collector has not been unduly rapacious, the farmer may retain enough grain to see his family through to the next harvest and have some to sell in the nearest market town. After he has prepared his fields for the crops of winter wheat and rape, the farmer and his household turn to a variety of winter chores: repairing farm implements and buildings, weaving thatch, spinning and weaving rough cloth, making shoes, and doing other household chores. With the approach of the New Year the farmer looks forward to some festivity, perhaps calling for a feast and the slaughtering of the family pig; if debt looms large, the pig may have to be sold to help pay the bills.[5]

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3. Cf. the description in Gerald Winfield, China, The Land the The People, New York, 1948, pp. 49-52. For the slightly different work cycle in the terraced upland ricefields, cf. ibid., pp. 53-58.

4. Cf. Morton Fried, The Fabric of Chinese Society, New York, 1953, pp. 186-200. On (continued next page)

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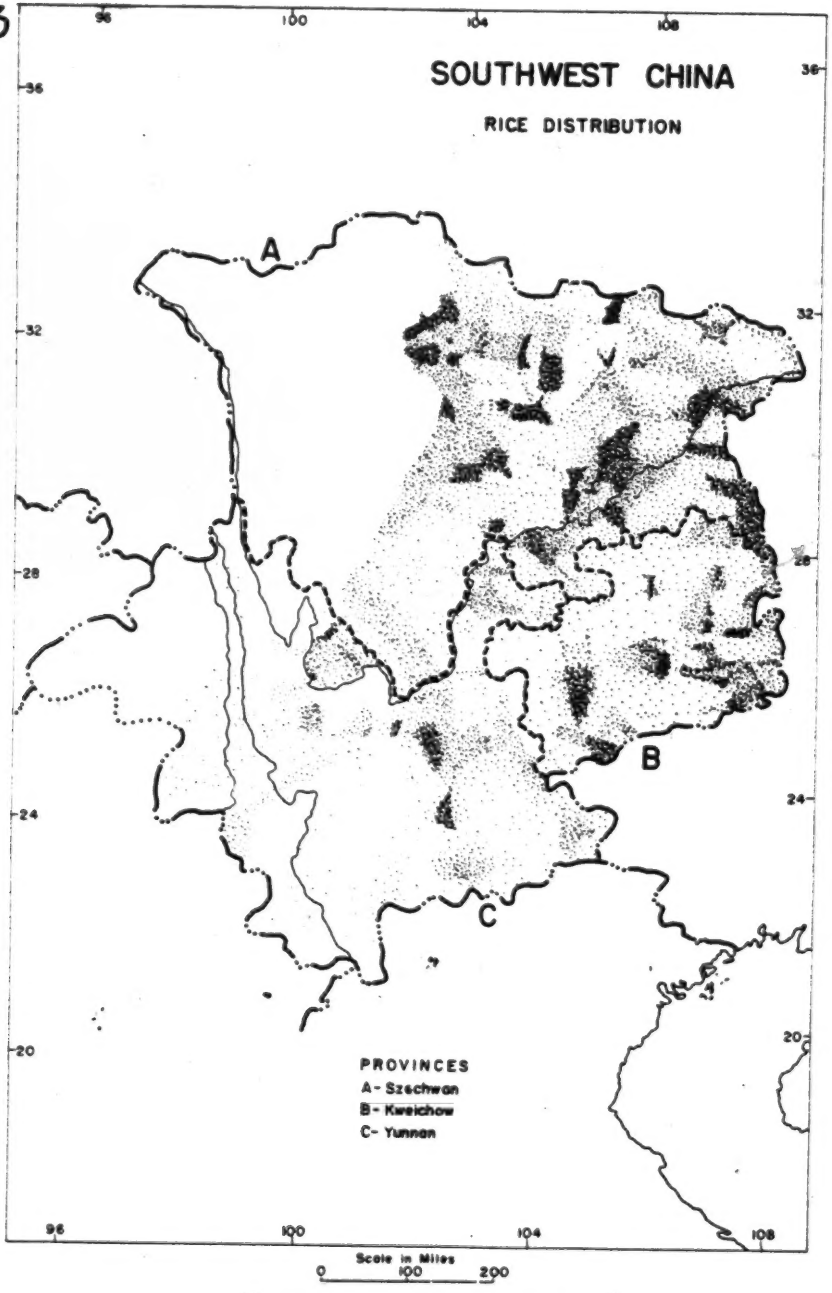

[facing p. 745(a)]

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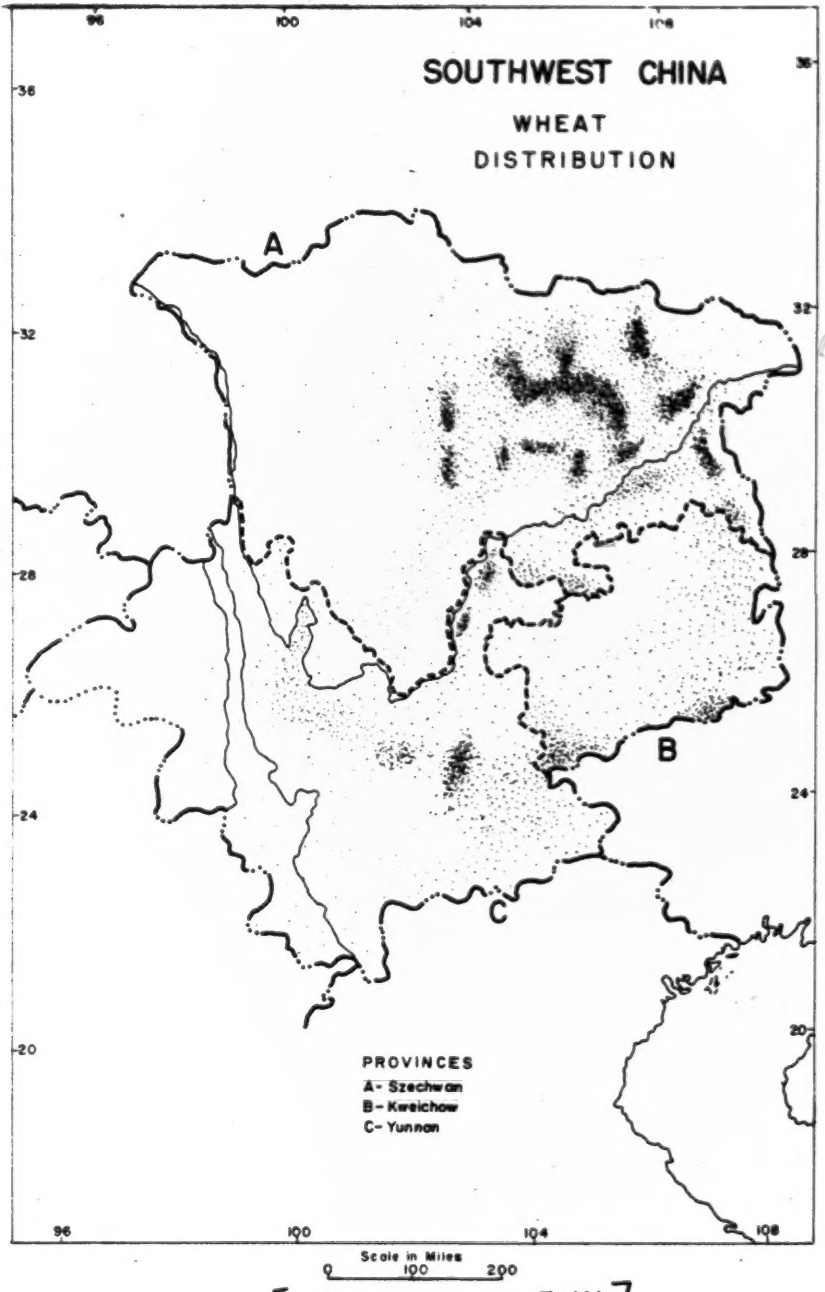

[facing p. 745 (b)]

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475 according to an incomplete report made in 1952, there were approximately 200 state farms of varying sizes in Southwest China.[13]

V. AGRICULTURAL PRODUCTION

A. Production of Grain

243
433 Szechwan Province produces more grain than other provinces in the Southwest China region. The entire region produces approximately 17 per cent of the grain produced in China as a whole; Szechwan Province alone produces 10 per cent of the country's grain; the other three provinces together produce only 7 per cent of the total for the entire country.

The western Szechwan plains, irrigated by the 2,000-year-old Tu-chiang Yen Reservoir, is considered one of the richest granaries in China.[14] The province of

13. Kung-fei T'u-kai Pen-chih Chi Ch'i Yen-pien [Land Reform and Its Development in Communist China], Taipei, 6th Section, Central Reform Committee, Nationalist Party, 1952, p. 63.

14. China Daily News, Aug. 31, 1955.

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243 433 Szechwan was expected to produce approximately 375,000,000 shih-piculs (20,625,000 tons) of grain in 1955, an increase of 23.5 per cent over the amount produced in 1949.

Prior to 1952, Kweichow Province was not self-sufficient in its production of grain. It had the reputation of being a province in which the people were forced to live from hand to mouth. In 1953, for the first time in the history of the province, the harvest of grain was enough to meet the demand of the local population.[15] The output of grain in Kweichow in 1954 and 1955 was higher than in 1953. During July-August 1955, approximately 807,400 shih-piculs (44,407 tons) of grain were "exported" from the province.[16] In the "crop year" (July to June) 1954-55, approximately 4.7 million shih-piculs (258,500 tons) of grain were exported from Kweichow Province.[17]

Grain production in Yunnan Province increased after the adaptation of improved techniques and the introduction of more modern farm implements. In spite of a period of drought in 1953 and floods in 1954,

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15. New China News Agency, Kweiyang, Aug. 26, 1955.
16. Ibid.
17. Ibid.

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243 the plan for grain production was overfulfulled,
433 according to Communist reports.[18]

Table 2 shows the progress of grain production in the Southwest China region.

Table 2. Grain Production in Southwest China

Unit: million. S = shih-p'i-tan. T = tons.

Grains	1949 *	1951 *	1952 #	1953 x	1954 x	1955 y
Rice	135,000 S (7,425 T)	167,040 S (9,187 T)	291,200 S (16,016 T)	293,832 S (16,162 T)	301,840 S (16,601 T)	320,544 S (17,630 T)
Wheat	56,250 S (3,094 T)	69,600 S (3,828 T)	45,240 S (2,488 T)	45,648 S (2,510 T)	46,893 S (2,579 T)	49,799 S (2,739 T)
Soyabeans	11,250 S (618 T)	13,920 S (766 T)	11,960 S (658 T)	12,068 S (663 T)	12,937 S (681 T)	13,165 S (724 T)
Tubers	60,000 S (3,300 T)	74,240 S (4,083 T)	20,800 S (1,144 T)	20,988 S (1,154 T)	21,560 S (1 ,187 T)	22,896 S (1,260 T)
Others z	112,500 S (6,188 T)	139,200 S (7,656 T)	150,800 S (8,294 T)	152,163 S (8,369 T)	156,310 S (8, 597 T)	165,996 S (9,130 T)
Total	375,000 S (20,625 T)	464,000 S (25,520 T)	520,000 S (28,600 T)	524,700 S (28,858 T)	539,000 S (29,645 T)	572,400 S (31,482 T)

* Economic Year Book 1952, Hong Kong, Economic Bulletin, 1952, pp. 37-38. The production data of various crops were estimated according to percentage distribution in 1946.

\# Economic Bulletin, Hong Kong, March 10, 1953, p. 12.

x China Daily News, New York, August 4, 1955, Ch'en Yün's report to the National People's Congress on July 21, 1955, and Nov. 24, 1955. The data of various crops were calculated according to the percentage distribution in 1952.

y Based on Li Hsien-nien's Budget Report of 1955, New China News Agency, Peking, July 28, 1955. The data of various crops were calculated according to the percentage distribution in 1952.

z Including millet, corn, kaoliang, barley, oats, broad beans, and peas.

18. Wen-hui Pao [Wen-hui Daily], Hong Kong, June 13-14, 1955.

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433 In analyzing the above table, it will be noticed that grain production in Southwest China has shown a consistent increase since 1949. If 1949's output is taken as 100, the index of grain production increased to 124 in 1951, 139 in 1952, 143 in 1953, 145 in 1954, and 153 in 1955.

In terms of acreage planted in various food crops in 1946, rice led in the Southwest Region by 7.4 million shih-mou (1.2 million acres), constituting about 34 per cent of the total grain acreage. Table 3 shows the total acreage of various grain crops in three of the four provinces in the Southwest Region:

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Table 3. The Acreage of Grains in Southwest China 1946*

(Unit - 1,000. S - shih-mou. A = acres.)

Crops	Szechwan	Yunnan	Kweichow
Rice	30,259 S	10,317 S	7,436 S
	(5,043 A)	(1,719 A)	(1,239 A)
Wheat	24,887 S	5,864 S	4,672 S
	(4,148 A)	(977 A)	(779 A)
Barley	12,476 S	2,508 S	3,372 S
	(2,079 A)	(418 A)	(562 A)
Other Grains#	37,546 S	11,623 S	5,909 S
	(6,258 A)	(1,937 A)	(985 A)
Tubers	9,276 S	369 S	406 S
	(1,546 A)	(62 A)	(68 A)
Total	114,444 S	30,681 S	21,795 S
	(19,074 A)	(5,113 A)	(3,633 A)

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* Director of Budgets, The Statistical Year Book of the Republic of China, Nanking, 1948, pp. 73-74. Figures on the acreage of grains in Sikang Province are not available.

including millet, corn, kaoliang, oats, peas, and broad beans.

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Table 4. Grain Supply in Southwest China, 1954

(Unit = Million tons)

Grains	Gross Production#	Supply After Provision for Seeds, Fodder and Waste		Supply After Milling		Total Net Supply After Converting into Rice-Equivalent	
		Conversion Standard*	Quantity	Conversion Standard*	Quantity	Conversion Standardy	Quantity
Rice	16,601	92.01	15,275	92x	14,053	1.00	14,053
Wheat	2,579	86.47	2,230	80	1,784	1.02	1,820
Soyabeans	681	81.94	558	100	558	0.99	552
Tubers	1,187	64.00	760	100	760	0.28	213
Others[a]	8,597	76.80	6,602	89	5,876	1.00	5,876
Total	29,645		25,425		23,031		22,514

* FAO Balance Sheet for 1933-37, compiled from FAO World Food Survey, Food Balance Sheet for China, 1931-37.

See Table 2.

x The Chinese Communist milling standard for rice is 92, and this figure is used for the present calculation.

y Derived from the quantity of calories of different grains and tubers using the conversion standard of FAO, 3,430 calories = one kilogram (2.2 pounds) of rice as our basis of calculation.

a Including corn, millet, kaoliang, barley, oats, broad beans, and peas.

[facing p. 757]

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B. The Adequacy of Grain Supply

243
433 One of the most important problems involved in the production of grain in Southwest China is the need to determine the adequacy of supply as it meets or fails to meet the local demand for grain. In order to estimate supply and demand, the following procedure was adopted: (1) data on the gross production of various grains in 1954 were used as the basis for calculation; (2) allowance and deductions were made to provide for the amounts necessary to provide seeds for re-sowing, the amounts necessary as fodder, and the amounts considered waste; (3) allowance was made for the varying losses of the several types of grain during the milling process; (4) all unhusked grains were reduced to milled products suitable for human consumption; it was then necessary to convert all grains other than rice into "rice-equivalents," according to the accepted standard; and (5) in determining the total demand for grain, the actual population, regradless of age or sex, was figured in terms of the equivalent number of "adult males."

The process for conversion of grain into "rice-equivalents" is shown in Table 4. The process for conversion of the population of the provinces of the Southwest Region into equivalent "adult males" is shown in Table 5.

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Table 5. Population in Terms of Equivalent "Adult Males"*

Province	Population	Population in Equivalent "Adult Males"
Szechwan	62,303,999	51,089,279
Sikang	3,381,064	2,772,473
Yunnan	17,472,737	14,327,644
Kweichow	15,037,310	12,330,594
Total	98,195,110	80,519,990

* In making this conversion, the co-efficient of 0.82 is used. It represents the mean between 0.76 derived by C. M. Chiao in his work, China's Food and Population, Shanghai, 1937, and 0.88 worked out by T. H. Shen in his book, Agricultural Resources of China, New York, 1951.

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433 Using the statistics in Tables 4 and 5 as a basis for calculation, the total supply of grain -- in terms of rice-equivalents -- available for human consumption in 1954 in Southwest China was 22.5 million tons (20.46 million metric tons). If we use as the basis for estimate the Wu formula[19] of 217 metric tons of milled "rice-equivalent" grain for every 1,000 "adult males" per year, the total amount required to feed 80.52 million "adult males" in Southwest China was 17.47 million metric tons, leaving a surplus of almost 3 million metric tons (3.3 million tons) of "rice-equivalent" grain for export to other regions.

C. Cotton Production

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433 During a six-year period ending in 1955, cotton production in the Southwest China region showed a considerable growth, although some ups and downs were noted during the period. Data on cotton production in the region are given in Table 6.

19. Yuan-li Wu, An Economic Survey of Communist China, New York, Bookman Associates, 1956, p. 165.

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PART I

INTRODUCTION

The Province of Yün-nan

101 Yün-nan 雲南 (South of the clouds) is the second largest province of China,
161 and is situated in the extreme south-west of that vast country. Its area is approximately 146,700 square miles, and in 1933 it had a population of 11,795,486,
[212] or about 80.4 persons to the square mile. Of this population 6,095,549 were male, and 5,699,937 were female, and 88.88 per cent of the entire population was illiterate.

131 In the north it borders on Ssu-ch'uan 四川 and Hsi-k'ang 西康, in the west on Hsi-tsang 西藏 (Tibet) and Mien-tien 緬甸 (Burma). In the south it adjoins the south-eastern Shan States of Burma and also Indo-China, while in the east it borders on the Chinese provinces of Kuei-chou 貴州 and Kuang-hsi 廣西.

133 Yün-nan is a high table-land, intersected by some of the largest rivers of Asia, such as the Yangtze, Mekong, and Salween, and by the eastern branch of the Irrawadi (the Ch'iu Chiang 球江 of the Chinese) in the extreme west. These rivers flow parallel to each other for a considerable distance in terrific gorges. The intervening mountain ranges, which in the extreme north-west reach heights of 22,000 feet, are crowned by eternal snow. Of these the Mekong-Salween divide forms, in part, the Tibet – Yün-nan border. The altitude increases in the north-west, and we find towns at 11,500 feet elevation.

[361] In the south, the province is partly covered with tropical jungle where tigers
[243] roam and malaria is prevalent, and where the Tai or Shan hold undisputed sway, as no Yünnanese will live below an altitude of 4,000 feet. Here the water-buffalo is at home, and rice is the main crop.

231 In the north the yak grazes on the high alpine meadows, and barley is grown at 12,000 feet. The yak furnishes the inhabitants with meat, milk, butter and cheese; its dung (argols) is used as fuel and its hair for the weaving of cloth for tents; it also serves as a transport animal. Here barley takes the place of rice and is the staple food of the Tibetans.

101 The capital of the province is Yün-nan fu, situated at an altitude of 6,400 feet, on a large plain surrounded by mountains. Near it is the famous lake known as Tien Ch'ih 滇池 or K'un-yang 昆陽. To-day Yün-nan fu is called K'un-ming 昆明, which, during the reign of Han Wu Ti, was the land of I-chou Chün 益州郡. While the name K'un-ming is an ancient one it seems not to have been applied to the land which bears that name to-day prior to the Yüan (Mongol) dynasty. The *K'un-ming hsien chih* speaks of three K'un-mings. In the oldest geographical record of Yün-nan we read, however, that the name K'un-ming had first been given to the lake at Yün-nan fu by General Chuang Ch'iao of the State of Ch'u in about 280 B.C. (*see* Note 3, page 6).

As this is not a history and geography of the whole of Yün-nan, but only of a specified area in its north-west, namely the region now occupied by the Mo-so

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scends into a valley enclosed by arid hills. The valley floor is planted with wheat at an elevation of 7,400 feet. Continuing in this valley we come to the hamlet of P'u-ch'ang-ho 普昌河 (Universal Prosperity), so named after the stream which divides it in two and is spanned by a bridge. This region and the neighborhood of P'u-p'ung was the happy hunting-ground of the bandit chief Lao Ying-hsiung 老英雄, who held sway at the time of my visit in 1928. Since then he has met the fate of most of the men who follow that dangerous profession.

From P'u-ch'ang-ho the trail once more ascends the pine-covered spurs to 7,725 feet elevation. The whole country is one vast sea of mountains. Leaving a deep valley to the left, we climb to 7,900 feet over a broad, gravelly, sandy spur, and then descend into a large valley to the hamlet of P'u-p'ung 普湖.

Tenth stage. — From P'u-p'ung to Yün-nan-i 雲南驛 is a distance of 65 li. Elevation 7,000 feet. (An *i* 驛 was a courier or dispatch station.)

From P'u-p'ung the trail climbs steeply to a flat spur at an elevation of 7,700 feet, where a lonely temple is situated dedicated to Kuan Ti (Kuan Ti Miao). The whole plateau is of sandstone and deeply eroded. Beyond the temple are a few farm-houses. The trail leads on over rolling country on the top of broad spurs of yellow sand and clay, covered with a scrub vegetation of pine, wild pears, Cornus, and a mass of Gnaphaliums. To the north are deep depressions, while the track skirts the mountain-sides near the top. The entire region is wild in the extreme, poor and unproductive. Hamlets are few, and when encountered they consist of only a few houses; cultivation being carried up the steep hill-side. Near a grove of large oaks is the hamlet of Shui-p'ang-p'u 水滂舖 (Roar of the waters), elevation 7,700 feet, on the inner slopes of the mountains, facing a depression south-west.

We continue now over a steep road to the top of another spur, elevation 7,800 feet, between scrub-oaks and Ketteleria trees. Beyond this pass is the hamlet of An-nan-kuan 安南關 (Pass of the peaceful south), a distance of 25 li from P'u-p'ung. In ancient days there used to be stationed here a *hsün-chien* 巡檢 (sub-district deputy-magistrate) who examined the travelers. This is the regular lunch-stop for caravans. From here the trail ascends to 8,000 feet along the edge of deep ravines where poplars and *Rhododendron Delavayi* grow; a splendid view is obtained of the large plain of Yün-nan-i to the west. Continuing for some li on the top of the spur, with waves upon waves of mountains to the south, we finally descend over a steep and much eroded trail, the mountains being sandstone, to this plain.

Yün-nan-i plain is about 25 li broad and over 60 li long, yet does not contain a single stream, or flowing water of any kind, being dependent throughout on wells and ponds. At times these become dry and water must be carried from great distances. Near the hamlet of Mu-p'ang-p'u 沐滂舖, at the foot of the spur at an elevation of 6,900 feet and the first hamlet encountered on the Yün-nan-i plain, are square ponds of bluish-grey water, the only supply of the village. Wheat is grown but no rice. A trek of about 20 li over the level plain brings one to the lonely and dreary hamlet of Yün-nan-i (Yün-nan post station).[17] The inns are poor and terrible, and the two temples of the village are

[17] Yün-nan-i is east of Yün-nan hsien. Near to it is the ancient village of Ku-ch'eng-ts'un 古城村; it was on that account considered the Ku Yün-nan chün-ch'eng 古雲南郡城

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Beyond Sha-p'ing, at the end of the lake,[36] the trail climbs the rocky spur among old graves, skirts the red hill-sides above the marshy plain to the east, thence through a lovely wood and out onto the eroded, red, rocky hills. High ranges enclose us on both sides. We descend to the walled town of Teng-ch'uan,[37] crossing by a bridge over a small stream called the Ch'i Shui 漾水 which forms the moat of the city, and flows past the south gate. A long street descends into this forlorn place, which dips northward. There are no inns for caravans, but a large school-house, or former Confucian temple (Wen Miao 文廟), gave us shelter. The temple, situated in spacious grounds, is in fairly good repair. An agricultural station and the yamen of the magistrate adjoin it. The plain is very fertile and the wheat-fields were the best so far encountered. Buckwheat is also grown.

Fifteenth stage. — From Teng-ch'uan to Niu-kai 牛街 is a distance of 90 li. Elevation 7,500 feet.

From the town we descend to the plain, where we met hundreds of Min-chia peasants carrying local produce to market, such as cereals, rice, pears, mats, reeds, wine in earthen jars, hides, vegetables, etc., and in such quantities that I was astonished and wondered who would buy all these things. It was an endless procession, for it was market-day in Teng-ch'uan. The trail leads between fields and through a large marsh with tall rushes growing in it which are used in making mats and the Ta-li hats.

[36] At the north end, 15 li south of Teng-ch'uan near Sha-p'ing, there is a marshy pond separate from the Ta-li Lake, though its waters drain into it. It is called Shang Erh Ch'ih 上洱池 (Upper Erh Ch'ih).

[37] In the Han dynasty, Teng-ch'uan was in the territory of I-chou Chün, in the prefecture of Yeh-yü 葉榆. In the beginning of the T'ang dynasty it was the T'eng-pei chou 弄棟州, dependent on Yao chou 姚州, the seat of the Tu-tu 都督 (military governor). Afterwards it became the T'eng-t'an chao 羌謎詔 by conquest. It was united with Nan-chao and the latter established the *t'an* 賧 of Teng-ch'uan 鄧川. Afterwards it was changed to the city of Te-yüan or Te-yüan ch'eng 德源城.

In the beginning of the Yüan dynasty there was established the Sub-military station of 1,000 families of Te-yüan.

In the 11th year of Chih-yüan 至元 (1274) the name was changed to Teng-ch'uan chou 鄧川州, dependent on Ta-li. This name was retained in the Ming dynasty. To-day it is called Teng-ch'uan hsien.

In the third year of Lung-ch'ing 隆慶 (1569) the T'u-chih-chou 土知州 (native prefect) A 阿 was done away with and a transferable official appointed, under whom were registered or enrolled the families of 12 li (communes), and who controlled one hsien. (From *Tu-shih Fang-yü-chi-yao* 讀史方輿紀要, ch. 117, p. 8b.)

In ancient days Teng-ch'uan had no wall. The first was built, of tamped earth, by magistrate Chou Wen-hua 周文化 in the third year of Lung-ch'ing (1569).

Later it sank in the sand and water and the city was without a wall; it was not rebuilt until the 14th year of Ts'ung-cheng (1641). It had three gates — in the east, south, and north respectively. It was rebuilt several times, but in 1762 it was replaced by a brick wall which was then three and seven-tenths li in circumference and had four gates.

The town is most peculiarly situated on a steep slope, with the Ch'i Shui 漾水 flowing past the highest part of the town just outside the south gate, which has a small stone bridge in front of it. This stream which encircles the city debouches into the Lo-shih Chiang 羅時江 to the north. One steps from the bridge down into the gate and on down the long, steep street which leads through the town. In summer Teng-ch'uan is said to be frequently inundated with flood water. A common saying is that the magistrate who built the wall was

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Our trail keeps to the east slope of the gorge and ascends to the end of the ravine, or rather its beginning, on a narrowing plain. Here stood a village, but nothing is left now except charred ruins, it having been burnt down by the bandits. We emerge into a red, hilly country, and here the Lang-k'ung River receives an affluent.

The trail follows the left bank of the stream along the foot-hills and by the village called Hsün-chien-ssu 巡檢司, thence across the gravelly stream-bed, and continues on the right bank between roses and Pyracantha bushes. We cross a gravelly plain to the base of a red hill, which we ascend to the top, at an elevation of 7,550 feet. Here, to the right of the trail, is a small but beautiful lake called Kan-hai-tzu 乾海子. We now descend between pine-covered hills to a plain on which is situated the hamlet of Ying-shan-p'u 應山舖, elevation 7,350 feet. To our right is a steep, rugged mountain mass cut up by deep ravines or chutes. It is a sacred mountain called Fo-kuang-chai Shan 佛光寨山 or simply Fo-kuang Shan;[43] half-way up the mountain is a cave said to hold 10,000 people. A temple, called Ling-kuang Ssu 靈光寺, is visible on the slopes; the temple was built in the first year of Wan-li (1573) by the village police chief Lü Meng-hsiung 呂夢熊.

From here we follow over the well-cultivated plain, wheat being the most abundant crop, past the villages of Wen-pi-ts'un 文筆村 and Ch'ang-ying 長營, until we finally reach the hamlet of San-ying 三營 (Three camps). It is a long, narrow village with a peculiar gate in the center. Elevation 7,500 feet. On this stretch we met long processions of Min-chia women carrying furniture, latticed Chinese doors and windows, baskets or huge stacks of straw hats, and — these were in the majority — huge juniper coffin-boards seven feet long, four inches thick, and three feet wide. These came from Pai-mang Shan 白芒山, many stages to the north, where there are large forests of immense junipers — *Juniperus wallichiana*. They are floated down the Yangtze to Shih-ku and are thence carried to Teng-ch'uan and by boat on the lake to Ta-li.

From San-ying it is five li to Niu-kai 牛街 (Cattle-market).

A short distance beyond San-ying is a limestone hill called Huo-yao Shan 火藥山 [44] (Fire medicine or powder mountain): it is about 300 feet high, with a pagoda (*wen-pi* 文筆) on the top. The rocks are full of holes and the entire hill is honeycombed; it is the only limestone hill in the immediate neighborhood. At its foot are boiling hot springs, the water being crystal clear as it boils and bubbles up (temperature 170° F.). Steam rises everywhere between the rice-fields and the people wash their clothing in the boiling pools. In February, 1935, this peculiar mountain suddenly erupted. A severe earthquake preceded the eruption, the noise emanating from the mountain sound-

[43] It is also called Fo-kuang-chai 寺 and I-nü Kuan 一女關 (Pass of a woman). The latter name has reference to a narrow slanting defile back of the mountain. It was in this cave that Chu-ko Liang, marquis of Wu 武, captured Meng-huo 孟獲. Later in the Ming dynasty in 1383, General Fu Yu-te 傅友德 suppressed a rebellion of native chiefs who fled into this cave. At that time 13,000 people in all were decapitated and 400,000 families of the native tribes made their submission. It was then that Li-chiang made its submission to the Ming, and the Mo-so were pacified.

[44] Also called Huo-yen Shan 火焰山 (Flaming Mountain).

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from Tien-wei. In the distance can be seen the northern peak of the range, separated by the Yangtze from the main range. This peak is called in Na-khi, Ha-ba ndshĕr nv-lv (the Ha-pa Shan 哈巴山 of the Chinese), simply called Hsüeh-shan 雪山 (Snow mountain) on the Chinese military map.

We follow the edge of the plain, skirting the foot-hills between fields of wheat, beans and peas (only the northern part of the plain is cultivated with rice), pass the hamlets of Han-teng 漢登 and Hsi-chuang 西莊, a distance of ten and a half li from Tien-wei; then Chu-chüan-ch'ang 猪圈場, and from there to Shui-chai 水寨. From this last village it is only a short distance to the walled town of Chien-ch'uan 劍川. Here we met hundreds of Min-chia peasants carrying heavy loads, some enormous earthen jars and pots, others mats, firewood, and pigs in baskets. Very large pigs were slung on poles between two men, the pig securely tied in a mat.

About 20 li from Tien-wei begin the walls of Chien-ch'uan (Rapier stream). This place is renowned for its carpenters, who are clever wood-carvers, and makers of furniture.[47] Chien-ch'uan is at an elevation of 7,750 feet. To the west, on the grassy slopes of the foot-hills, are thousands of graves. Here is the favorite camping place of the Tibetan caravans which come from the north to Ta-li and beyond. Above the graves on the hill-side is a large Buddhist temple called Ti-tsang Ssu 地藏寺 (Temple of the Bodhisattva Kshitigarbha, Lord of the Earth).

The trail passes between irrigated wheat and rice-fields to the hamlets of Pan-teng-ho 板凳河 and Yung-p'an-ts'un 永盤村. We follow the left border of the plain, which narrows towards the north, passing the villages T'ai-

[47] Chien-ch'uan is the ancient territory of the Man-i (savages). The Hsi-i (Western barbarians) called the town Lo-lu, for in their language *lo-lu* meant lake, and had reference to the Chien Hu or Chien-ch'uan Lake near which the town is situated. In the T'ang dynasty (618–906) it was the I-tu Lo-lu ch'eng 羈實羅魯城. I-tu was one of the 10 original *chien* 睑 (districts) of the Nan-chao Kingdom. (*Chien* is the Chinese transcription of the Tai word *keng* or *xieng*). The Lo-lu ch'eng is the present-day foundation of Wa-yao-ts'un 瓦窑村 (Tile kiln village). It is 15 li south of Chien-ch'uan. The walls of the Lo-lu ch'eng were built in the T'ang dynasty. In the beginning of the reign of T'ang Cheng-yüan 貞元 (about 786), Nan-chao fought Chien-ch'uan and captured the entire territory. Their chief changed his residence to Chien-t'an 劍睑 and changed its name to Chien-ch'iang 劍羌. The Nan-chao Kingdom established the government of Chien-ch'uan. In the Sung dynasty it was changed to I-tu t'an 羈實睑 and was also called Po chou 波州.

In the beginning of the Yüan dynasty there was established the *so* 所 (Sub-military station) of the 1,000 families of I-tu (I-tu ch'ien-hu so 羈實千戶所).

In the 11th year of Chih-yüan 至元 (1274), the name was changed to Chien-ch'uan hsien (Magistracy of Chien-ch'uan) under the rule of the Ho-ch'ing Lu 鶴慶路 (Ho-ch'ing Circuit). The *Chien-ch'uan chou chih*, ch. 3, fol. 15b, states that the military and civil yamen of the governor of the Circuit of Ho-ch'ing was established in the 8th year of Chih-yüan (1271) and the I-tu 羈實 was changed to Chien-ch'uan hsien dependent on the Circuit of Ho-ch'ing. In the 17th year of Ming Hung-wu (1384) it was raised to a chou and the families of 18 li 里 (communes) were registered there. In ancient days Chien-ch'uan had no wall, but during the reign of Hung-chih 弘治 (1488–1505), magistrate Li Wen 李文 built a tamped earth wall. In the 15th year of Ts'ung-cheng (1642) the wall was changed to a brick one, 16 Chinese feet high, and 12 thick. The moat was eight feet wide and five deep. During an earthquake in 1688 the wall fell, the towers toppled over the gates, and it was not rebuilt until 1690; it was once more rebuilt in 1712 and again destroyed by an earthquake in 1751. In 1860 the Mohammedans flooded the town with water from Lake Chien and many lengths of the south-eastern part of the wall collapsed. It was finally rebuilt.

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CHAPTER II

THE LI-CHIANG DISTRICT

487 133 137 *Eighteenth stage.* — From Chiu-ho to Li-chiang 麗江 is a distance of 90 li. Elevation, 8,200 feet.

From Chiu-ho we follow the plain, leaving to the left the large village of Nan-su-mei 南蘇梅 and five li further on coming to the village of Pei-su-mei 北蘇梅,[1] the names meaning Northern and Southern Su-mei respectively. Opposite the village and the temple is a small open-air theater where we used to stop with our caravan on former journeys. In this region the walnut trees were still leafless. This at the end of April. The hills forming the western valley wall are a brilliant red and covered with pines (*Pinus yünnanensis*). Many villages are scattered along the foot-hills, some extending up their slopes (*see* description of Chiu-ho li, p. 178). Small trails lead from this valley to Lao-chün Shan 老君山, which has always been a rendezvous for brigands. From the village of Pei-su-mei, it is five li to the Na-khi hamlet of Tu-wo (P'u-wu in Min-chia) where the Na-khi caravans prefer to put up for the night. Both villages are situated at the eastern side of the valley; here, also, the hills are covered with pines and numerous walnuts; the latter, mostly cultivated, can be found along the road, besides pears, peaches and plums.

The trail meanders over the gravelly valley floor past Wu-li-p'ai 五里牌, then P'o-chio 坡脚 (Foot of the hill) or Kuan-shang 關上 (Na-khi, Ts'o-k'ö), 30 li from Chiu-ho. This is the last village in this valley, at the head of which is a beautiful, deep blue lake, the head-waters of the Yang-pi River. The lake is called Bbu-t'u-ndĕr (Shrimp pond), in Na-khi. From here it is a drop of 2,000 feet to the Yangtze and a distance of about 50 li to Shih-ku. The valley is inhabited mostly by Min-chia in the lower, and Na-khi in the upper part.

From the village of Kuan-shang the trail is paved, but is in a most terrible condition, and the grade next to impossible. It ascends from an elevation of 8,300 feet at Kuan-shang, over the partly forested mountain called T'ieh-chia Shan 鐵甲山 which hems in the valley to the east, to the top of a pass at 9,800 feet, and shortly to another pass 10,100 feet above the sea. Here we have emerged on a rather large, dry plateau, the trail leading between low, round, wooded hills. The Na-khi come from their villages and cultivate the gentle slopes of the hills, mostly with buckwheat and oats. On both sides of the trail are large sink-holes from which the plateau derives its name, Lo-shui-tung 落水洞 (Sinking water caves).[2] These holes, which are apparently of great depth, remind one of volcanic blow-holes or small craters; but here all is lime-

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[1] The village is called Ts'o-k'ö-muan in Na-khi (Lower Ts'o-k'ö). Transcribed in Chinese characters it is written Ts'o-k'uei mou 錯鬼牟. It is also called Nan-kuan-chan 南關站.

[2] "The topography of this down country is very old and in striking contrast to the valley which leads to the Yangtze and Shih-ku, and in which Kuan-shang is situated. The features of the down, with its gentle, rounded hills and shallow valleys, were developed before the formation of the Kuan-shang valley. The rocks exposed in the western part of the downs belong to the Kaoliang Series. The latter consist of phyllites and chloritic schists, quartzites, crystalline limestone, and limestone breccia. They belong to the Archeozoic or earliest era of geological history." (GREGORY)

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CHAPTER VI

CHUNG-TIEN 中甸

634 The district of Chung-tien, situated north of the Yangtze loop, forms an inverted pyramid, the apex being its southernmost point, the broad base of the pyramid adjoining the new province of Hsi-k'ang the former Ch'uan-pien 川边, or frontier of Ssu-ch'uan, commonly known as the Tibetan Marches. Chung-tien is called Ndzu-dü in Na-khi, and in Tibetan rGyal-thang.

Only the southern half of the region is inhabited by Na-khi, as the district of Bbĕr-ddĕr, which adjoins the Yangtze on the east and the mountain range of A-nà Ngyu (A-nà-ngv, An-nan-ku 安南古, also known as Pei-ti Shan 北地山) to the north; beyond are Tibetans only.

The district of Chung-tien is divided diagonally from north-west to south-east by a stream known to the Chinese as the Chung-chiang Ho 中江河. They call the upper part the Shih-to-kang Ho 硕多岡河, while the Na-khi call the entire stream the Yü-ndo gyi. It is however better known as the Chung-tien Ho 中甸河. It debouches into the Yangtze above the 'A-ts'an-gko gorge. Its source is to the north of Pei-ti Shan (A-nà Ngyu). The lake of Chung-tien is called Ts'ao Hai 草海 by the Chinese and Nda-bpa Ḳhü in Na-khi; the Tibetans call it Na-pa Tsho.

361 The seat of the magistracy is Chung-tien, whence the district derives its name. Chung-tien is situated at an elevation of 11,500 feet on a large grassy [243] plain too cold to grow anything but wheat, and is inhabited by about 200 families, mostly a mixture of Chinese, Mo-so and Tibetan. Its geographic [131] position according to Major Davies is latitude 27° 50′ and longitude 99° 45′. [548] To the north of Chung-tien dwell the notorious robber tribe, the Tong-wa (sTong-wa), the Chinese Tung-wang 東旺.

634 173 The *Hsü Yün-nan T'ung-chih-kao*, Vol. 12, ch. 9, fols. 11b and 12a, states that during the Han dynasty Chung-tien was in the hsien of Sui-chiu 遂久, subject to Yüeh-sui Chün 越巂郡. Sui-chiu was west of Yung-ning, and is the present Chung-tien. Under the Shu Han (221–264) it belonged to Yün-nan Chün 雲南郡. In the Sui dynasty (590–617) it was the Mi chou 靡州, controlled by the Tu-tu fu 都督府 (Yamen of the military governor) of Jung chou 戎州 (this is the present-day I-pin 宜賓 (Hsü chou 叙州) of Ssu-ch'uan). In the T'ang (618–906) it was also known as Mi chou. Under the Mongols (1280–1367) it belonged to the circuit of Li-chiang. In the Ming dynasty (1368–1643) it was in the prefecture of Li-chiang. In the Ch'ing it remained unaltered. Wu San-kuei 吳三桂 rebelled and gave the land of Chung-tien to the Dalai Lama of Lha-sa.[1] In the fifth year of Yung-cheng (1727) it came under the control of Ho-ch'ing. A Chou-p'an 州判 (District judge) from the chou of Chien-ch'uan (a magistracy between Ta-li and Li-chiang) resided there. In the 21st year of Ch'ien-lung (1756) a change was

[1] According to the Mu Chronicle this was in the year 1668, during the rule of Mu Yi (1608–1692), chief of Li-chiang.

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(rDo-rnga-rong) in Tibetan, meaning Valley of the Stone drum. Wang-chiang Shan is a continuation of Lao-chün Shan 老君山, the latter being quite a distance south-west of Shih-ku.

The Yangtze at the bend is of considerable width — more than 200 yards. on its bank maize is cultivated. Small, grey, sandy islands, covered with grass, dot the river. It is said to be the fifth river in order of length, yet in the quantity of water discharged it is second only to the Amazon, four times as large as the Mississippi, and a hundred times as large as the Nile (GREGORY).

The town of Shih-ku [7] is situated on the very bend of the Yangtze, on the slopes and top of a promontory. Near the town is a sort of ferry consisting of a raft of doubtful safety.

The town consists of over 200 houses. The merchants and a few families are Chinese, the rest Na-khi; the population around Shih-ku is composed of Na-khi, Li-su (力些 or 獠猓) and Lo-lo. The town derives its name Shih-ku (Stone drum) from the large stone drum on the slopes to the north of the town. The stone drum rests on an oblong rock and is truncate at its base. A belief exists that should the drum split, a calamity will befall the country. Oral tradition relates that Chu-ko wu-hou 諸葛武侯 (Chu-ko Liang 諸葛亮) erected the stone drum when coming from the south to attack the T'u-fan.

The drum was erected to guard against the T'u-fan and was thus known as the Chen t'u-fan ku 鎮吐蕃鼓. At first there was no inscription on the faces or sides of the drum. During the reign of Chia-ching, in the year of

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longed to Yüeh-sui 越巂, which was in the State of Shu, it is believed that the present Shih-ku is identical with the Shih-niu of Shu, the birthplace of Yü.

Legend relates the following: The eldest son of the Yellow Emperor (Huang Ti 黃帝) was Ch'ang I 昌意 who descended from on high and dwelled on the Zo Shui 若水, and became the Chu-hou 諸侯 (Prince). He married a woman of a family from the mountains of Shu; they called her Ch'ang P'u-shih 昌濮氏. There was born Chuan Hsü 顓頊, who for 10 years assisted Shao Hao 少昊 (2598 B.C.) who was the second of the five legendary rulers. Twenty years afterwards he ascended the throne as Emperor (2514 B.C.). The Zo Shui is the present Chin-sha Chiang (Yangtze).

Kun 鯀 (the father of Yü) married a woman of the family Hsin 莘. Her name was Nü Hsi 女嬉. Though of age, she had no illicit offspring.

Hsi went up the Chih Mountain 薏山 and there obtained the *I-i* 薏苡 (*Coix lachrima-jobii*, a grass related to maize) and swallowed it. She felt affected as if she had had intercourse with a man, and became supernaturally pregnant. Her side (under the arm) was cut open and there came forth Yü.

The *Fang-yü chi-yao* 方輿紀要, ch. 24, fol. 27, states, however, that the Shih-niu Shan 石紐山 is one li south of Shih-ch'üan hsien 石泉縣 (this is 215 li south-west of Lung-an fu 龍安府 in north-west Ssu-ch'uan). Yü was born in Shih-niu.

Shih-ku is a long way removed from the Hsi Ch'iang 西羌 country, and it is just a fancy of the compiler of the *Tien-hsi* to declare that Shih-niu and Shih-ku are identical.

The *Li-fan T'ing-chih*, ch. 1, fol. 29b, states that "the Shih-niu Shan is in T'ung-hua-li 通化裡. On the top of the mountain a Yü miao 禹廟 has been built. Behind the temple is a rock wall touching heaven. On that wall are engraved the three large characters, 石紐山. Who carved them is not known. Yü was born on Shih-niu Shan, which is in the present Shih-ch'üan hsien. This was the Han dynasty Kuang-jou, 廣柔. Thus the Yün-nan Shih-ku cannot be the Shih-niu of Yü.

[7] Shih-ku is in latitude 26° 50′ and longitude 99° 55′, according to Major H. R. DAVIES (*Yün-nan*, p. 256).

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harmonious. The red hue of the banners reflected the first movements of the sun; the merry songs were heard a hundred li away. 173

"In the 40th year of Chia-ching (1561) when the dragon was in the attitude of *hsin-yu* 辛酉, in the ninth moon (October 9th to November 6th) on an auspicious day, the civil and military prefect of Li-chiang, hereditary T'u-ssu [native chief], received by Imperial decree and favor promotion to the grade of mandarin of the third rank, and a dignity similar to the nine ministers was bestowed by the supplementary title of Ya-chung ta-fu 亞中大夫 [vice-minister, ○○○], Mu Kao of the hereditary Mu family ○○."

4. FROM SHIH-KU TO CHÜ-TIEN 石鼓 巨甸

From Shih-ku the trail descends to the Ch'ung-chiang Ho (Major Davies' Hsi-mi Ho), the Pa-tzu gyi (La-ba gyi) of the Na-khi. Old willows line the banks of the stream, while a covered wooden bridge, the posts held together by crudely forged chains, spans it.[20] Arrived at the Yangtze (the Chinese Ch'ang Chiang 長江 or Long River) we follow its western bank under the shade of giant willows which have weathered many a flood. The river is here very broad and its waters a silvery gray; it is decidedly picturesque where it turns to the east and then north, to cut through the Li-chiang Snow range. The fields are of a rich sandy loam and bear excellent crops of rice and maize much finer in every way than on the upper slopes. 487* 133* 137* [243]

We now enter the wide river valley and lose sight of the spur on which Shih-ku is situated. The mountains rise steeply on both sides of the valley floor, exposing reddish-yellow sandstone; the grassy slopes support scattered pine trees with long drooping branches. A few li over a sandy road through broad maize-fields, bring us to the hamlet of Shih-men-kuan 石門關[21] (Stone gate pass); diagonally opposite on the east bank of the river is the hamlet of Boa-t'a-wùa (H-M., Botauo). This is a historic spot. A native Supervisor (Hsün-chien 巡檢) was established here in the 22nd year of Chih-yüan 至元 (1285) of the Yüan dynasty, but later abolished. In ancient days it belonged to the district of Chü-chin and to the village La-pa-ts'un 剌巴村 (the present Shih-ku, for the latter is called La-ba in Na-khi). Many battles have been fought here against the T'u-fan who dwelled to the north of it. It was the battle-ground of the T'ang, as well as of the Mongol and the Ming generals.[22]

[20] The bridge is called Lai-yüan ch'iao 來遠橋, and is also known by the name of Tiao-ch'iao-kuan 弔橋關; and was built in the fourth year of Ch'ien-lung (1739).

[21] The distances from Li-chiang to Chü-tien and beyond are given as follows in the Li-chiang records, Vol. 上, ch. 4, fol. 34: from Li-chiang to Shih-ku 77 li, to Shih-men-kuan 20 li, to Ch'iao-t'ou 70 li, to the large village of Chü-tien 70 li, to T'a-dza (T'a-ch'eng-kuan 塔城關) 90 li.

[22] In the ninth year of Cheng-yüan 貞元 of T'ang Te Tsung 德宗 (793), P'u-wang 普王, a Na-khi chief, guided the T'ang troops under General Wei Kao 韋皐 to fight the T'u-fan at Shih-men-kuan and defeated them (*see* Mu Chronicle, p. 95).

In 1382 Fu Yu-te 傅友德, a Ming general, was sent to conquer south-west China for the Empire. It was then that the Na-khi chief Mu Te submitted and guided Fu Yu-te's troops to subdue the Tibetans who had resisted at Shih-men-kuan. In 1385 the native chief of

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Back of Shih-men-kuan a beautiful little valley extends west into the wooded hills, while a perfect cone of a mountain stands sentinel at the entrance, crowned by a lovely temple, guarding the valley and the village (PLATE 153).

The trees found along the river bank here are mostly *Diospyros lotus*, a wild persimmon, walnuts and catalpas. The trail is very narrow and follows the bank of the river which is, however, quite broad, and full of islets (October). Red sandstone walls are exposed on the otherwise green slopes of the mountain, which rise steeply from the valley floor. Fields of maize and a few houses announce the fact that we have reached the hamlet of Mùen-tsü-dtu (Mu-ts'ao-tu 木草都; H-M., Mutsüto).

The hamlet is distinctly scattered, for several li beyond is the rest of the village, considered part of it, but called Bü-dsu-wùa-lo (H-M., Büdsuölo). At this village a little stream enters the Yangtze, spanned by a small, wooden, covered bridge, picturesquely set in a grove of willows.

The region is called Hung-shih-ngai 紅石崖 (Red cliff), from the red sandstone cliff mentioned previously. The Li-chiang records state that "it is exactly 100 li from Li-chiang, or 20 li from Shih-ku, and rises straight from the Yangtze, overlooking the same; it flanks the river for a distance of over 30 li and adjoins Shih-men Kuan to the south. It is the throat of the Mongols and Tibetans, and is still considered the dangerous pass of western Yün-nan." It is indeed a very important pass, the only one here on the Yangtze and frequented by the Tibetans, who come, sometimes with a thousand pack-mules, once a year to fetch tea from P'u-erh 普洱 in south Yün-nan. In the summertime, when the Yangtze is in flood, the trail is often submerged and impassable.

Many valleys debouch into the Yangtze valley, the trail passing through bushes of small white-flowered Bauhinias, *Prinsepia utilis*, Spiraeas, a Desmodium with pink flowers, Rhamnus, etc. The path is lined by limestone boulders and conglomerate. The valley narrows and we enter a veritable canyon of bleak, reddish sandstone walls which rise hundreds of feet straight from the river-bed. This is the real Hung-shih-ngai (H-M., Hoschinga), the "dangerous pass of western Yün-nan." The trail is built up of rock, straight out of the river-bed and flush with the wall. Opposite, on the eastern bank of the Yangtze, is situated the Na-khi hamlet of Lä-ndo (Leng-tu 冷渡, Cold ford; H-M., Lindo). A blackish peculiarly shaped mountain guards the other side of the canyon.

The mountain spur which flanks the Yangtze on the west is called Hua-ma Shan 花馬山 (*see* Historical Part pp. 95, 186), after which the ancient

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Chü-chin chou, named A-nu-ts'ung 阿奴聰, revolted and took possession of Stone gate Pass, but was defeated by Lu Chung-heng 陸仲亨, who was marquis of Chi-an 吉安. In 1391, according to the Ming annals, the Na-khi chief Mu Ch'u (the eighth generation, born in 1345, and known as A-te A-ch'u) guarded the Shih-men Kuan, when he became the chief of Li-chiang at the death of his father. He was succeeded at Stone gate Pass by his brother Mu Kuei 木貴. In the Mu chronicle the latter's name is written Mu K'uei 木奎. His Na-khi surname was A-k'ö. He was the Shih-men-kuan Ch'ien-fu-chang 千夫長 (Head of a thousand men). Later he became a Hu-fu-fa 虎伏法. Shih-men-kuan is the name of a village as well as of a pass.

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sides. Unfortunately the Li-ti-p'ing is a notorious robber haunt where Li-su robbers hold up caravans, and loot and murder. Hence caravans and travelers do not tarry long, but hasten to more friendly regions. It is a gorgeous place to camp, virgin, undisturbed, a paradise for the lover of the out-of-doors.

The *Yün-nan Pei-cheng-chih*, ch. 18, fol. 3, says: "The Li-ti-p'ing 栗地坪 is 40 li east of Wei-hsi. The road is narrow and like the steps of a stairway, the immense trees form a huge canopy which cuts off all view, clouds envelop the region, being wafted back and forth by the wind. There is much rain and mist, and even on a summer day one must wear furs. In the ninth moon there is much rain and snow; in the winter and spring the snow lies 10–20 feet deep. Once the snow lay so deep in the autumn that along the road tall poles had to be erected at intervals of 10 feet with cross-pieces tied for support. Often for 20 to 30 days the trail would be completely blocked. In the second or third moon [April to May] the trail would be passable for human beings but not for horses. Even after days and days of sunshine only half the snow would melt. After the beginning of summer the snow would melt sufficiently to make the trail visible, as well as the cliffs. In ancient days the snow lay deeper, but is now diminishing in volume."

This would indicate that in earlier days (the book was written in 1831) the forests were vaster than they are now, as it states that the road was narrow and like a stairway and no view could be had. To-day the central part of the Li-ti-p'ing is cleared of forest and its place is taken by a broad meadow. The snow is still a great obstacle to travel and the road is often closed for months.

The pass at the northern, or Wei-hsi, side of the Li-ti-p'ing, is at an elevation of 11,000 feet. The summit of this pass consists of a ridge of porphyry, while the descent westwards is over decomposed igneous rocks with occasional outcroppings of limestone and dolerite. A long spur extends southwest by west towards Wei-hsi; the upper part consists of slate and the lower part of black slate, or phyllite, with intrusive rhyolite (GREGORY). The trail descends through lovely pine and spruce forest mixed with oak, and becomes really a road and a surprisingly good one for this part of the world, with few rocks and a good grade. We follow on the top of a lateral spur through beautiful forest, but then descend rather steeply to a small stream which leads to the village of Pei-pa. The view of Wei-hsi is hidden by a mountain range which extends at right angles to the spur we descend. The vegetation at the little stream is composed mainly of wild pears and apples, maples, hazelnut bushes, and oaks (*Quercus Griffithii*), plus bushy *Rhododendron racemosum* and a hydrangea. Beyon Pei-pa we descend to the Wei-hsi Stream which flows in a northerly direction into the Mekong. This stream is called the Yung-ch'un Ho 永春河 (Eternal spring River). A wooden bridge spans it which is called Ch'ing-yün-hsiang ch'iao 卿雲享橋. It is also called the Yung-ch'un ch'iao and was first built in the 14th year of Tao-kuang (1834).

The banks of the stream are flat and wide-spreading and are cultivated with maize and rice.

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slopes, whence the tip of Me-tse-mo becomes visible in the west. Here the Mekong makes a complete S figure, flowing through a very narrow defile. The trail leads to the top of the spur, through a gap with two *mani* pyramids. No view is, however, obtainable from this spur as one might expect. At the northern slope of the spur is an oblong, somewhat horse-shoe-shaped valley, with fields and scattered walnut trees, and a conglomeration of houses which form the village of Chia-pieh 加別 or Chia-pi 加比. The Chia-pieh stream flows below the village through a narrow ravine cut through brown sandstone into the Mekong. We follow the stream to the Mekong which, a little south of Chia-pieh, enters a very narrow, forbidding-looking gorge; the stream is here not wider than 60 yards with a strong current. Boulders of limestone in the Chia-pieh stream are covered with the familiar Tibetan magic formula in bas-relief. Here the Mekong is a fierce rapid, rushing madly into the weird black gorge.

The trail follows the Mekong in its arid trench, here with less steep slopes. On the west side a torrent joins it; it is a glacier stream from the Kha-wa-kar-po range. Far away to the north there could clearly be seen a white pyramid west of Yar-kha-lo (Yar-kha-logs or lho),[53] the Chinese Ya-k'a-lo 雅卡洛, in south-east Tibet. It is the Ta-mo-yum [53] (written stag-mo-yum, Tigress mother), another sacred peak of the Tibetans. Kingdon Ward tells us that Ta-mo-yum is a hump of porphyry.

The trail follows over a small plain strewn with boulders and rocks; the mountains rise gently from it, and the Mekong flows between rock walls some 60 feet below it. The vegetation here is a typical xerophytic one consisting mainly of *Sophora viciifolia*, Berberis, and the small-leaved *Bauhinia densiflora*.

Up the Te-ch'in valley from Chin-ta. — A few li bring us to the mouth of a narrow valley; it is the Te-ch'in (A-tun-tzu) valley with its stream rushing into the Mekong at the foot of a small flat spur on which is situated the Tibetan hamlet of Jö-mda (hJol-mdah),[54] in Chinese, Chin-ta 金打. Leaving the Mekong behind we follow the narrow lateral valley up to the village of Lo-ga-ngu, where a stream descends the slopes of Pai-mang Shan and joins the Te-ch'in stream. Here the mountain slopes, higher up, are again covered with *Thuja orientalis*, but stunted trees. A short distance beyond is the hamlet of Ch'i-tzu-shih 柒子石, inhabited by friendly Tibetans (PLATE 170). Maize is still cultivated in the otherwise barren valley. From the slopes back of the village a view can be had of Mt. Ma-tse-mo (Yung-chih hsüeh-shan 雍芝雪山), the highest and southernmost peak of the Kha-wa-dkar-po range (PLATE 171).

The trail follows the A-tun-tzu stream, crossing it several times, once over a wooden bridge, past the village of Ching-k'ou 井口 to the town of A-tun-tzu (PLATE 172). The A-tun-tzu valley is bounded on the East by the steep walls of a plateau (13,000 ft.), from the edge of which the country rises to the rocky peaks of the Mekong-Yangtze divide. Te-ch'in (A-tun-tzu) itself lies between hills of mica-schist on the west and limestone (Minchia Series) to the east.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

the Dang or A-dang lung-pa (Chü-k'o-ti Chiang). Instead of following the stream a rocky trail leads to a pass on the spur, and we descend to what is left of or originally was Liu-t'ung-chiang 溜筒江 (MAJ. D., Liu-t'ou-chiang 溜頭江; Ting's New Chinese Atlas gives the name Lan-ts'ang-chiang = Mekong instead, this is an error) situated on the east bank of the Mekong at an elevation of 7,800 feet. Liu-t'ung-chiang refers to the rope-bridge which spans the Mekong here; the village, if such it can be called, consisted of one single mud-brick house in ruins, but inhabited by a poor family, apparently squatters. Opposite on the west bank of the Mekong is the Tibetan hamlet of Ma-pa-ting 麻巴定 (written Mag-pa-sdeng in Tibetan).[20] The rope bridge here spanning the Mekong is about 100 feet above it, the river flowing between steep rock walls and is about seventy yards wide. The only water available is the muddy water of the Mekong. Women go down with huge wooden cylinders to fetch it; to prevent the water from splashing they float a lot of dead twigs on it, in lieu of green leaves or leafy twigs as is usual.

The wind howls furiously in this arid gorge, filling the air with dust. It is one of the dreariest regions, dry, forsaken, and forlorn, a veritable desert.

5. YAR-KHA-LO (YA-K'A-LO 雅卡洛)

A trail continues along the gorges of the Mekong to Yar-kha-lo (Ya-k'a-lo), a distance of five days from Liu-t'ung-chiang. The mountains which hem in the Mekong are steep and the trail is here and there obliterated by land-slides of loose shale. It often leads to a height of 10,000 feet or even more, crossing bare spurs between which lateral streams descend from the snowy heights. In these lateral valleys are situated Tibetan hamlets, where barley and wheat are cultivated, with fruit trees such as pears, peaches, and walnuts, on the margins of the fields.

On the west bank of the Mekong are about as many villages as on the east bank. North of Liu-t'ung-chiang beyond the village of Ma-pa-ting there are the following in the order named from south to north: Ssu-ts'un 司村, Jung-ma 容馬 and Me-re-shü (Mei-li-shu). South of Ssu-ts'un are the hamlets of Kua-lo 瓜洛 and Hu-li 呼里. On the east bank Chiang-p'u 江舖, La-p'u 腊舖, Pa-me or Pa-mei 巴美 (MAJ. D., Pamien) and Pa-yung-kuo 壩永鍋 (MAJ. D., Pa-yung-ko) and then Yar-kha-lo. Pa-yung-kuo is at an elevation of 11,500 feet.

Yar-kha-lo (Yar-kha-logs) is a town of about 100 houses, and is situated at 9,500 feet elevation (latitude 29° 2′ 30″). Here are important salt wells situated on the banks of the Mekong between giant blocks of granite; they supply all the villages of this region with salt. The valley slopes are composed of weathered sandstone, while about 300 feet above the river are beds of rubble which are apparently river terraces. A Catholic mission station has been established for many years in the town. Since the Tibetan wars in 1930–1931 Ya-k'a-lo has been annexed by the Tibetans, and is now reckoned to Tibet proper instead of Ssu-ch'uan. The Yün-nan — Tibet and former Ssu-ch'uan border is only a short distance beyond Pa-yung-kuo.

■ ཡར་ཁ་ལོ

5; Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16
Pai-1 AE7

S P 622 the strength of his claiming to possess supernatural powers found no difficulty in raising a following of 150 men. With these he made a strong stockade on top of a hill, and for a long time defied the efforts of the sawbwa to turn him out. Chinese troops had to be sent for, and, under the direction of Colonel Liu, a successful attack was made, and the priest and most of his followers put to death on the spot.

The Möng Na sawbwa, who was present on the occasion, received the military decoration of the Peacock's Feather for his services. But the La-hsa chief got into serious trouble for allowing the rebellion in his territory. He was deprived of all rank and titles and now appeared in the ordinary dress of a Chinaman without any official robes or hat.

He certainly did not look the sort of man to put down a rebellion, a pleasant unsophisticated old gentleman with none of the energy of his cousin, the Ho-hsa sawbwa. He remarked in the course of conversation that he did not drink liquor much, as he was afraid it might rot his beard!

He was very anxious to go to Burma, but had to wait till his son was old enough to take his place in the government of the state. The Chinese do not allow a sawbwa to leave his own country for any length of time until his son is fit to act as regent.

S P 361 The valley in which the two states of Ho-hsa and La-hsa[1] lie is some 14 miles long and not more than two miles across at the widest point. Every inch of the flat ground is cultivated, and the villages are all built at the foot of the hills, evidently because space cannot be spared for them on ground which is capable of being irrigated for rice cultivation. The soil is poor, and the crop of rice grown is barely enough for the people to live on. Consequently large numbers of men, estimated at 2000 yearly, go out every winter and spread over the neighbouring Shan States and the north of Burma in search of work. Most of those who go out, work as carpenters and blacksmiths, in which trades they have a considerable reputation.

S P [134] [243] S P [463]

S 101 The chief claim to interest of these two states is that they are inhabited by a distinct race who do not exist

[1] Hu-sa and La-sa in Chinese, and Hotha and Latha in Burmese. The two states are often spoken of collectively as Möng Hsa by the Shans, and Maingtha by the Burmese.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

000 Shans Möng Ya. As the elevation he e is only 2,400 feet, the latter race have been allowed to retain undisturbed possession. They form part of the Shan state of Ta-mêng-t'ung or Möng Htong.

The next day we crossed the river. It is here 50 or 60 yards wide and was three feet deep, with a strong enough current to make the ford difficult. There is no boat or raft in the whole plain, so that if a traveller happens to arrive immediately after heavy rain, he has to wait till the water goes down again. In the rainy season it must usually be impassable. The Shans are not as good as the Chinese in their arrangements for crossing rivers.

Climbing a big jungle-covered range we took two days from here to reach Ta-mêng-t'ung, the capital of the state. 243 There are many cultivated clearings in the forest, and the chief thing grown is buckwheat, a beautiful crop at this time of year, making large red patches over the hillsides. 136 A notable event on the day we left Wan-tien was the putting up of a hare in the jungle. This is the only time I can remember having seen one in Yün-nan, though they are common in the Tibetan part of Ssŭ-ch'uan.

563 The plain of Ta-mêng-t'ung is not a large one, and as 622 it is not much under 4000 feet high there are some Chinese families settled here, though the majority of the inhabitants are Shan. The sawbwa, who was then only twelve years old, lives a little to the north of the main road, so we put up in the old town which lay on our route.

006 From here the main road to Yün Chou lies through Shun-ning, but I wanted to find a more direct route, so struck out E.S.E., and, after an uphill march, camped in the little Lo-lo village of Li-pa-sa at 6,200 feet.

The next day the road took an unexpected turn to the south and joined into the route by which Ker and I had come up from Chên-k'ang the year before. I had therefore to follow this road into Yün Chou, arriving there on the 11th December. I put up in a large temple, and we had a day's halt to rest mules and men. Some of the animals were in bad condition when we started, and two of them 435 were by this time unfit to carry loads. Luckily prices are *not high in western China, and I had only to pay £4. 12s.* and £3 for the two ponies I bought to take their places.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16
Sino-Tibetan Border AE3

take to talking Chinese and to practising some of the Chinese religious observances. Then the women even will learn to speak Chinese, will wear Chinese dress and even bind their feet. Finally the Lo-lo language is gradually dropped, and the young men grow up knowing nothing but Chinese. This stage once arrived at, the transformation is nearly complete, and the next generation will probably indignantly deny their Lo-lo origin.

The same process goes on with Shan and other tribes, but in Tibet exactly the reverse takes place. The Chinese become Tibetanised, and the children of a Chinaman married to a Tibetan woman are usually brought up in the Tibetan religion and adopt Tibetan customs. In Tibet proper this is perhaps not surprising, as the country ruled by Lhasa is practically an independent kingdom and the Chinese have little influence there. But in places like Chung-tien and other districts well within China, it is somewhat astonishing to find a regularly appointed Chinese official submitting to the indignity of being a complete nonentity in the country he is supposed to rule.

I think the reason of this may be partly found in the enormous power that the lamas wield over the laymen. Forming, as they do, nearly half the male population they have all the authority in their hands, and it would be impossible for a Tibetan to conform to Chinese customs or religious observances without incurring their anger.

Another cause which keeps the Tibetan from being absorbed may be sought in the cold inhospitable nature of his country. There is nothing to tempt the Chinese to emigrate into Tibet, and consequently they are never in ufficient numbers to influence the Tibetans round them. A similar cause has preserved some of the low-lying Shan States from absorption, the heat in this case being the reason that Chinamen do not settle there.

Chung-tien stands in a large plain which at the time of our visit was very bare, as the snow had only just melted off it. A little later, when the warmth of the sun has had time to act on the soil, damp from melted snow, green grass springs up everywhere. The height of the plain is 11,800 feet, and it is too cold to grow rice or even maize: wheat is the chief crop.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

As usual, we soon became the best of friends with the people whose house we had so unceremoniously broken into. We were given a large room and regaled with buttered tea which we found excellent after our cold march. The combination of the hot tea and the caloric-producing butter is just the thing for a cold climate. After all there is nothing more incongruous in putting butter in tea than there is in putting milk in it.

The house was a very large one and the only obstacle to our comfort was the horrible smell of an enormous cauldron of the coarsest kind of turnip which the people of the house were cooking as a delicacy for their dinner.

Our next march lay along a pleasant grassy valley full of flocks of sheep. Passing K'on tzŭ-k'a[1] we crossed a little pass from which the Yangtze was visible, and descended a narrow valley to Te-ga-ting. The weather was bright and fine again and we saw a good deal of game, including some Stone's Pheasants (*Phasianus elegans*), and two woodcock, at one of which I made a disgraceful miss.

Continuing down the same valley the next morning we reached the Yangtze and followed up the bank of that river to the Chu-pa-lung[2] ferry where we crossed to its left bank. The Yangtze is here from 100 to 150 yards wide, running with a strong current through very barren hills. The ferry-boat is a fine one and will take 15 mules across at once. The Tibetan name of the Yangtze is Dre Ch'u according to Rockhill. As pronounced locally it sounded to me like Nri Ch'ö or Ndri Ch'ö. The Mekong they call Da Ch'ö, and the Salween Chiama Ngö Ch'ö. The elevation of Chu-pa-lung is only 9000 feet, and the shade temperature rose as high as 70°.

On the 8th May we reached Ba-t'ang. The distance from Chu-pa-lung is nearly 20 miles but the road is an easy one. The Ba-t'ang plain was the biggest I had seen since leaving Chung-tien a month before. It measures about two miles by one mile, and was beautifully green with crops of wheat and barley.

The town has some 200 houses, most of them of a good

[1] Rockhill's K'on-djin-k'a.
[2] Dru-ba-nang in Tibetan according to Rockhill.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

is chiefly cultivated. Of the mountain ranges some are rather bare, covered with grass or fern only; others are well clothed with fir woods, or at lower elevations with semi-tropical forests. To a traveller accustomed to the vast jungles of Burma, Yün-nan would appear a bare country, but it would seem well wooded when compared to the barren hills of the north-west frontier of India. It is in fact neither a very bare nor a very thickly wooded province. No doubt there was formerly much more forest, but the wants of the inhabitants in fire-wood and house-building have entailed much cutting of timber, which has never been replaced by planting. The amount of cultivation in the hills varies much according to the density of population and the fertility of the soil. In places nearly the whole hillside is fields; in other parts one may go for miles without seeing a clearing. In eastern Yün-nan especially the soil is often so dry and water so scarce that cultivation is hardly possible.

The principal crop of Yün-nan is rice. This is the staple food of the Yünnanese, and it is only in very out-of-the-way hill villages that the people are too poor to afford it and have to live on maize or millet. All the plains that are capable of being irrigated are given up to rice cultivation throughout the summer.

The rice harvest is in October, and when this has been reaped, a second crop of opium, wheat, or beans is in many places sown for the winter.

I should estimate the relative quantities grown as about half opium[1] and a quarter each of wheat and beans. It is not, however, every plain that is capable of producing this second crop off the ground from which the rice has been reaped. When this cannot be done some of the plain land is usually kept unsown with rice, so as to be used for winter crops.

In the hills rice is also extensively grown. In many places the sides of the valleys can be dug into terraces and irrigated by the little hill streams, and here good crops are obtained. In less favourably situated localities the rice

[1] Since this was written, however, the opium crop has been considerably diminished, as Hsi Liang, the present Viceroy, caused all poppies near Yün-nan Fu to be pulled up in Dec. 1907. Along the main routes and for two or three days' journey round the capital scarcely any opium has been grown in 1907–8.

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crop is dependent on the rain for its water, and where there is any jungle this is cut down and burnt, the wood ashes helping to manure the ground. Maize, millet and buckwheat are also grown on the hills, and opium is one of the chief things cultivated. This latter crop is an easy one to raise, and the produce finds a ready sale. Opium cultivation is certainly increasing in Yün-nan.

Among other agricultural products of the province may be mentioned tobacco, which is largely grown in many districts; tea which comes principally from the Chinese Shan States south of Ssŭ-mao; sesamum and other oil-producing seeds; hemp used for making rope; sugar which will only grow in the lower and warmer valleys; walnuts, persimmons, pears, peaches and other fruits, and many different kinds of vegetables.

As to livestock, there is nothing as big as what we should call a horse, but ponies and mules are kept everywhere. Pack animals are the principal means of transport in the province, so that they form a very necessary possession both to farmers and merchants.

To the farmer cattle and buffaloes also are essential as a means of ploughing his fields, for ponies and mules are never employed for this purpose. In the deep mud and water of the irrigated rice fields buffaloes are the only animals that can do the ploughing.

Unlike the Shans the Chinese do not use bullocks as pack animals. It is true that in out-of-the-way places a farmer may occasionally be seen taking his produce to market with a mule saddle fastened on to a bullock or cow, but this is exceptional. There are no trading caravans of bullocks. In some of the plains of eastern Yün-nan bullocks and buffaloes may be seen drawing small carts, but these can seldom find a road good enough to lead from one plain to another, and are only used for farming purposes.

Nor are cattle considered by the Chinese as of any use for food. The orthodox Chinaman does not kill cattle to eat, and it is only in towns which contain a good many Mahommedan inhabitants that beef can occasionally be got. As to milk it is practically unknown in China. A little is now sold in Yün-nan Fu, but it is only in the Tibetan corner of the province that cows are regularly milked.

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APPENDIX IV

COMMERCIAL PROSPECTS OF THE YÜN-NAN RAILWAY.

000 We now come to the consideration of what the Yün-nan Railway is likely to find to carry, and this can best be discussed under four heads.

1. Exports to other provinces or countries.
2. Imports.
3. Goods carried within the province.
4. Passenger Traffic.

With regard to exports and imports it must be borne in mind that the railway if carried right through is not simply a line connecting Burma with Yün-nan, but is also a line connecting the Yangtze and eastern China with Yün-nan. Goods would therefore be imported and exported in both directions.

Another point which must be emphasised is that Yün-nan has a temperate climate, and Burma a tropical climate. The natural result is that each country can produce many things which are impossible in the other, and that each can thus supply many of the other's wants.

Exports. Let us deal first with *exports*. *Rice* though extensively cultivated is never likely to be exported, as it forms the staple food of the province.

•243 *Wheat*, however, is on a different footing. It forms a quite unimportant part of the food of the province, as flour is used chiefly for making cakes and sweetmeats. It is not therefore at present very extensively grown[1], and its cultivation might be enormously increased if there was an easy means of transport to Burma, a country which at present gets all its flour from India.

[1] Owing to the restrictions on the poppy there was in 1907-8 a very large increase in the amount of wheat grown.

[p.316]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

312 rich water supply by the Yangtse, the Min, and other rivers. Numerous channels are built here, for instance, such as the Wu Tung-chiao and Chien Wei districts. But contrary to the practice of Chengtu Plain, and for reasons unknown, very few of these channels are used for irrigation purposes. Instead, they are principally for transportation use.

135 Other interesting features of this agricultural area include its well-balanced endowment with mineral resources. Neither like the Chengtu Plain area of western Basin--where little or no mineral deposits are found--nor similar to the anticlinal areas of the eastern Basin--where is located the largest concentration of the Basin's mineral deposits, especially coal and iron--this area is rather well-balanced in various kinds of mineral deposits. In fact, this area is reasonably rich in every one of the strategic minerals, including salt, coal, iron, petroleum, copper, gold, and aluminum. Especially the salt production is the richest and the most important at present (Fig. 20).

241 In agricultural richness and productivity, this agricultural area of southwestern Basin, as a whole, compares favorably
433 with that of the specialized commercial agricultural area of the lower To-Kou valleys. This fact is evidenced by the fine, well-kept farmsteads here (Fig. 34). In terms of population density, this area also stands out as one of the five high densely populated areas of the Basin (Fig. 10).

E. Agricultural Products

241 The Szechuanese commonly claim that anything which is produced on earth may be found in the Basin. At least it is safe to say that there is scarcely an article grown in China which is not produced here in abundance. First of all, the summer field crops include rice, corn, sugar-cane, tobacco, potato, millet, kaoliang, cotton, beans of all kinds, and a great variety of vegetables and fruits. The winter crops include principally wheat, rape, beans, peas, and many others.

1. Common Food Crops

243 a) Rice.--Rice (oryza sativa) is the master crop of the Basin. It normally occupies 43,000,000 mow, or 42 per cent of the

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total cropped area.[1] With the exception only of Kuangtung province, Szechuan leads all China in rice production, and has a total annual output of between 140,000,000 and 180,000,000 piculs (one picul equals 133.4 pounds). Rice is produced on all the valley bottom lands and lower terraces in every district of the Basin where water supply is sufficient. There are three principal rice-producing areas, namely, the Chengtu Plain of western Szechuan Basin, the Sui-yung-Lu-hsien area of the southern Basin, and the Sui-ning-Tung-nan area of northwest Szechuan Basin.

In Chengtu Plain, with the exception only of Tsungching where no efficient irrigation water connections have yet been effected, nearly all the districts normally devote 60 per cent or more of their cultivated area to this king-crop--rice. In the other areas, which are more representative of average conditions in the Basin as a whole, the rice crop generally accounts for 25 to 40 per cent of the total cultivated area.

But whenever and wherever natural conditions (particularly water supply) permit, rice always has the right of way. In fact, the whole crop system of the Basin is so synchronized that rice always claims the first place. For instance, in the Chengtu Plain area, winter crops such as wheat and beans are often stripped of their foliage during the early spring in order to hasten their maturity so that rice may be planted in time.

Generally speaking, there are three principal varieties of rice planted in the Basin, namely, the irrigated, the upland, and the "double-growth" (Tsai Seng Tao) varieties. The irrigated variety, including the so-called early-mature and the later varieties, are the most important and are widespread throughout the Basin, whereas the cultivation of the upland variety is limited to the Shih-fang, Jen-shou, Hung-yao, and Kao-hsien areas.

The Tsai Seng Tao or "double-growth" variety, although confined now to only one district in Peng-chieh, almost at the eastern edge of the Basin, is an interesting crop. This variety has the unique characteristic of producing two crops yearly on the same plant. Like other rice plants, this variety is generally seeded in the last quarter of March, transplanted in the middle of May, and harvested for the first time in the latter part of August.

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[1] Report of the Bureau of Central Agricultural Research (1939), p. 93.

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243 After the first harvest, the land is tilled and refertilized, and the plant continues to grow until the middle of October, when a second harvest from the same plant may be made. The most surprising thing is that, as it is reported, this second crop often even supersedes the first in quality.

The cultivation of this Tsai-seng-tao variety of rice is one of the most efficient uses of land for rice-cultivation, particularly in those hilly areas where the so-called "tung-shui-tien" (winter-storing-water-field) system is practiced. Recently, the Central Bureau of Agricultural Research, for the purpose of increasing land-use efficiency in rice-cultivation, launched a vigorous program for extending the cultivation of this variety in other areas of the Basin.[1]

The maturing season of the rice crop varies between ninety and one hundred days, depending upon topography, climate, local agricultural practices, and the specific variety used. The seeding season may vary from the early part of March in the southern Basin to about the middle of April in the north. Consequently the harvest season follows the same trend, varying between the later part of July to the middle part of September. Here the operation of both the latitudinal and topographical influences is evident. Ordinarily, besides the aquatic habit, rice requires constant tillage, with repeated heavy manuring from time to time in order to secure a full crop. The plant usually occupies the ground from the latter part of May until early September.

One of the most serious problems in connection with agricultural land-use for rice culture, as already mentioned, is the practice of the so-called "Tung-shui-tien" system. Under this system the land is used for only four or five months during the year. This limited use is particularly unjustifiable in view of the favorable climatic conditions (the long growing season) and at the same time the urgent need for enough food to supply the millions of inhabitants. In the Basin there are over eight months which have an average temperature of 10 degrees C. (Table 3). Moreover, during the months of rice-growing period, the average monthly temperature is over 20 degrees C. (Table 3). Thus, climatically, there is every possibility for two crops of rice a

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[1] Chao, op. cit., p. 23.

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year. Recently, the Central Bureau of Agricultural Research has been working feverishly to solve this problem.

It is interesting to note in this connection that contrary to the belief of many western agriculturalists and geographers, the age-old practice of rice-culture in Szechuan Basin, as in China as a whole, possesses many inherent virtues. First of all, not to mention the high yields the rice gives,[1] which are necessary to feed the millions, rice culture is the most effective means of preventing soil-erosion and conserving soil fertility. Moreover, since the rice fields are flooded during much of the growing season, rice cultivation has an important effect in checking floods. Third, wet-flooded rice-culture generally slows down the erosion of the soil, even more effectively than forest covering. On account of the topography of the Basin, this point is particularly significant. Finally, the abundance of water at times insures the land against becoming gummed up due to an excess of salts as in desert regions.

b) Corn.--With the exception of rice, corn or maize (Zea Mays) is the most important summer crop in the Basin. It usually occupies about 12,000,000 mow, or 12 per cent of the total cultivated area of the Basin. The Basin ranks first in all China in corn production, and normally has a total annual output of 32,000,000 piculs[2] (Fig. 35). Among all the crops in the Basin, corn is the most unusual and has a romantic story of considerable geographic interest.[3] Like potatoes and tobacco, corn is of American origin and was introduced to China only during the last century by some Catholic priests during a serious famine in the Basin.[4] Maize was raised on the hills near Wei-chao in 1857, less than one hundred years ago.[5] It has now become one of the

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[1]With the exception of potatoes, the rice yield is the highest among all crops in China (cf. Buck, op. cit., p. 226).

[2]Bureau of Central Agricultural Research, Szechuan Provincial Government, Agricultural Statistics (Lung Ching Pao Kao, 1939), p. 94.

[3]It is interesting to note that corn, known by its Chinese name as "Yu Shu Chu," literally meaning the "jade grain from Shu" (the old name for Szechuan), was probably first introduced into Szechuan and later spread from there to other parts of China. This is evidenced by the Chinese name it now bears.

[4]Gazetteers of Szechuan, XXVI, 8.

[5]Gazetteers of Wei Cheo (1892 ed.), III, 28.

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most important food crops, constituting 8 per cent of the total food supply for the population here, particularly in the northern and eastern parts of the Basin. Its juicy shoots are also widely used as feed for pig-rearing in the hilly areas northwest of Chengtu Plain.

Corn is the staple summer crop in the more hilly areas which do not hold reservoir water. It is also the principal crop in areas where swift streams debouch upon the plain and where the soils are too sandy to hold water for paddy. Moreover, wherever the slopes are too steep or the gullies too narrow, and the soils are too thin for other food crops, a few stands of corn are always found. Many times the slopes where the corn is planted are so steep that one wonders how the farmers ever manage to sow and reap the crop. With the exception of a few districts like Si-Chung and Yung-chang, which for reasons unknown produce very little corn, corn is cultivated in nearly every district of the Basin. This is particularly so in the southern peripheral areas of the Basin where several crops may be harvested yearly.

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c) Potatoes.--The third most important summer crop of the Basin is the potato (Solanum tuberosum). It normally occupies about 6,000,000 mow, or about 6 per cent of the total crop area. On account of the high yield, the Basin leads all China in potato production, and has an annual output of 56,000,000 piculs (Fig. 35). Potatoes, like corn, are also of American origin and were introduced into the Basin only about seventy years ago.[1] They are now universally cultivated throughout the Basin, especially on the upper hill terraces. More than any other province in China (with the possible exception of Kwangtung), potatoes here serve as a very important source of human food, constituting about 9 per cent of the total food supply, particularly in the northwestern and southern hilly areas of the Basin. Sometimes they are also used as feed for pigs. It is reported that on account of the extraordinarily high starch content in the potatoes produced here, an increasing portion of the crop is being used in the manufacture of alcohol and other fuel supplies for war-use during recent years.

d) Kaoliang and other summer crops.--The other important common summer food crops in the Basin include kaoliang (Sorghum Vulgare) and a great variety of soy beans (Glycine hispida). Each

[1] Gazetteers of Ping Shan, I, 8.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

244 occupies about 4,000,000 mow, or 4 per cent of the total crop land. Kaoliang, sometimes called false millet, is a staple dry crop on hilly lands. It is noted for its special capacity to be without water for a long time (longer than corn) without drying to death. The choice of these two crops by farmers for a certain [273] area often depends on this point. Besides being used widely for human consumption, as well as for livestock feed, kaoliang is used mainly (between 70 and 80 per cent of the total crop) for the manufacture of wine, the famous kaoliang wine. This last use proves to be particularly advantageous to the farmers because wine can be transported to far distant markets when the sale of bulky grains, owing to prohibitive transportation costs, is difficult.

• 243 e) Wheat.--The most important winter food crop is wheat (Triticum Sativum). It normally occupies about 15,000,000 mow, or 17 per cent of the total crop area, and the Basin has an annual output of 44,000,000 piculs (Fig. 35). The Basin is the fifth largest wheat producer in all China. With the exception of the Chien-chiang district (which for reasons unknown does not produce wheat), wheat is produced as a winter food crop in nearly all parts of the Basin, particularly in the districts around Chengtu Plain. The wheat prefers the more clayey soils of the Basin, and gives a particularly good yield.

The crop matures generally in 150 to 170 days. In most parts of the Basin, the field is seeded in the middle of October and the harvest takes place in the early part of May, depending upon the latitudinal position, as well as the topography of the area. Next to rice, wheat is the most important food crop of the Basin, contributing 12 per cent of the total food supply. It is eaten in the form of "mien" (noodles) or in other forms of dumplings.

249 f) Rape seed.--The Basin leads all China, both in area and in total annual production of rape (Brassica juncea; a winter crop). Normally it occupies an area of 11,000,000 mow, or about 10 per cent of the total crop area, and the annual output is 15,000,000 piculs[1] (Fig. 35). From the rape seed, oil is extracted for cooking and many other purposes. The seed cakes also furnish

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[1]Bureau of Central Agricultural Research, Agricultural Statistics (1939), p. 97.

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a very important source of fertilizer. It is the most important source of vegetable oil supply of the Basin. Recently, research projects have been launched by the Central Chemical Research Bureau of China to study the possibility of using rape-seed oil for manufacturing synthetic petroleum and other motor oils for war use. 249

g) Barley and other winter crops.--Other important winter crops in the Basin include barley (Hordeum vulgare), buckwheat (Polygonum fagopyrum), and a great number of species of peas (Pisum Sativum). Barley normally occupies about 12,000,000 mow, or 11 per cent of the total crop area. Second in all China, the Basin's annual total output of barley normally amounts to 31,000,000 piculs (Fig. 35). Barley, like buckwheat, is an important dry winter crop on hilly lands in the northern part of the Basin. These crops generally do not require heavy soil, and call for little fertilization. The total acreage in various kinds of peas and beans is usually about 10,000,000 mow, or about 9 per cent of the total crop area. They grow both on hilly and plain areas throughout the Basin. But in plain areas they are used mainly for inter-culture purposes, with wheat and other crops. 243

2. Special Agricultural Products

a) Cotton.--China's "cotton-belt" lies north of the Yangtse. South of the Yangtse, comparatively little cotton is produced. Geographically, Szechuan Basin lies in a southernmost position among all the provinces north of the Yangtse and is therefore in an intermediate position so far as cotton production is concerned (Fig. 1). The most important cotton producing districts in the Basin lie between latitude 29 degrees and 32 degrees N. Particularly the heaviest concentration is at 31 degrees N., around the districts of the upper Pou River Valley, such as Suining, Shei-hung, Santai, Chung-chiang, and Yen-ting (Fig. 36). These five districts accounted for nearly 60 per cent of the total crop in 1936 (Table 4). 248

In these areas the total annual rainfall generally runs below 1,000 millimeters (Fig. 24). Most of the rain falls during the summer, but there is also considerable rainfall in the early autumn (Table 5). This distribution of rainfall, as we shall see later, is not very satisfactory for cotton production. The soil conditions, however, are quite favorable for cotton production.